

## Chemistry

Postgraduate study in Chemistry covers research from across a wide range of chemical sciences. You might find yourself in a research group designing enzyme inhibitors for diseases such as cancer, preparing new catalysts to help harness solar energy, developing a greater understanding and control of wine aromas, or designing new analytical instrumentation using laser micromachining.

Postgraduate study in Chemistry can be divided into two general areas – traditional chemistry, such as analytical, educational, environmental, inorganic, materials, medicinal, organic and physical chemistry, or additional disciplines such as forensics, food, wine, polymers and coatings, or green chemistry.

Some of the courses available in this subject include:

- Advanced Green Chemistry
- · Advanced Inorganic Chemistry
- Advanced Medicinal Chemistry
- Advanced Physical Chemistry

- Biomolecular Chemistry
- Current Topics in Analytical Chemistry
- · Research Methods in Chemistry



Explore and discover everything you need to know about studying postgraduate Chemistry: science.auckland.ac.nz/pg-chemistry





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#### **No.1** In New Zealand for Employability

QS World Rankings Graduate Employability, number one in NZ and 59th Worldwide in 2020

#### AVAILABLE IN:

- ✓ Bachelor of Science (Honours) (BSc(Hons))
- Postgraduate Diploma in Science (PGDipSci)
- ✓ Master of Science (MSc)
- Doctor of Philosophy (PhD)

You may also be interested in our programmes in Biological Sciences, Food Science, Forensic Science, Medicinal Chemistry and Wine Science.

#1

Chemistry

Our subject is ranked **#1** in New Zealand



Start early to avoid disappointment. Supervisors can usually only take a small number of students, so make sure you talk to them sooner rather than later.

Choose an area you feel passionate about. Undertaking research involves successes as well as challenges, so choosing a topic you are genuinely interested in will help you overcome challenges and get through the tough times.

Ensure you're compatible with your supervisor. Ask questions, seek advice and share your ideas with academic staff to find out their research interests, and whether you would be a good fit with their current projects.

#### **Findathesis**

Check out our searchable database of masters and doctoral supervisors and research projects that you can join at **www.findathesis.auckland.ac.nz.** 

### Guaranteed postgraduate scholarships

Did you know the University of Auckland offers guaranteed scholarships to highachieving domestic postgraduate research students?

Apply for admission to your chosen postgraduate programme and the University will consider your eligibility for a scholarship at the same time.

Learn more: www.scholarships.auckland.ac.nz

### **Careers in Chemistry**

Future opportunities for Chemistry graduates are many and varied.

Postgraduate qualifications in Chemistry introduce you to world-class chemical research and prepare you for chemistry-related careers.

Chemists are found in roles involving agricultural products, brewing and wine making, ceramics, food science, metals, paper, paint and plastics, pharmaceutical, polymers and coatings.

Employers include private companies, Crown Research Institutes, medical and diagnostic or government laboratories, and police forensic units.

Some of our graduates have been employed in the following jobs:

- Analytical chemist, Pfizer Pharmaceuticals Group
- Vice-president, Biosphere Technologies Inc
- Chemist, Teck Cominco
- Scientific advisor, Protagonist Therapeutics
- · Postdoctoral research associate, Oak Ridge National Laboratory
- · Technical director, Kemira Chemicals Inc
- · Research and development scientist, Agilent Technologies Australia
- · Senior research scientist, Queensland Alumina Ltd



### Shi-Wei Kim

Doctor of Philosophy in Chemistry.

"I was always interested in the sciences when I was in high school and Chemistry was definitely my favourite subject.

"I enjoyed my undergraduate Chemistry courses at the University of Auckland so much that I decided I would like to stay and pursue further research.

"I am doing research towards the total synthesis of the natural product hyrtioseragamine A, which is an alkaloid isolated from marine sponge.

## *"I really enjoy the independent research that comes with a PhD."*

"It has been shown to have preliminary antibacterial properties, and synthetic samples will allow for further biological testing.

"We have synthetic steps that we try to achieve, but there are often problems, like the reaction not working at all or not as well as we want, or making something unexpected. We have to find a solution to this or work around the problem.

"It's important to actually enjoy learning – doing courses you genuinely enjoy will make studying easier and your time at University more enjoyable."

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### Haere tonu ki tõu ara pūtaiao i tõ mātou Hāpori. Continue your Science journey

as part of our community.

## Food Science

By studying Food Science you can ask questions like, what constitutes a healthy diet? And, is there a way to engineer food to improve its nutritional value?

Food Science focuses on the manufacturing, processing and production of food. As a Food Science student you'll study topics such as the structure and composition of foods, food chemistry, nutritional and sensory qualities, food safety, preservation and evaluation.

Some of the courses available in this subject include:

- Food Safety
- Nutrition in Health and Disease
- Food Processing
- Engineering Biotechnology

- Food Science
- Food Analysis
- Applied Microbiology and Biotechnology
- Advanced Food Science



Explore and discover everything you need to know about studying postgraduate Food Science: science.auckland.ac.nz/pg-food-sci





NEW TRAINING

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- Postgraduate Diploma in Science (PGDipSci)
- Master of Science (MSc)
- ✓ Master of Food Science (MFoodSci)
- Doctor of Philosophy (PhD)

You may also be interested in our programmes in Biological Sciences, Chemistry, Chemical and Materials Engineering and Population Health.



WE HAVE state-of-the-art facilities



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### **Careers in Food Science**

Advancements in science and technology have created exciting and challenging opportunities for work.

A postgraduate qualification in Food Science will equip you with the skills to take up challenging positions in a wide variety of research and development contexts, including commercial enterprises in the dairy and brewing industries, Crown Research Institutes, multinational food companies and government agencies.

Our graduates work in areas such as food manufacture, food safety, food analysis, brewing, cereals and baking, dairy products, minimally processed fruits and vegetables, food additives, product development, sensory evaluation, winemaking and healthcare.

Our graduates have been employed in the following jobs:

- Quality assurance officer, ABE's Bagel Bakery
- Product evaluator, Fisher & Paykel
- Lecturer, Universiti Malaysia Kelantan
- · Scientific officer, Ministry for Primary Industries
- Toxicologist



### Yaoyao Peng

#### Doctor of Philosophy in Food Science.

"I love science, but in my opinion food science is unique because it gives us a better understanding of food functionality in our life. People sometimes cannot link food to science, simply because food is just too common in our life.

"It is indeed interesting and amazing when you realise how science can make a difference to our food and, more importantly, how it can change our lives. Food is no longer only for keeping us alive, but making our lives more nutritious and joyful.

#### "The advanced technology of food science produces more diversified products and makes our lives easier and healthier."

"My interest in this field has led me into doctoral study researching the compositional characterisation and potential health benefits of New Zealand grown feijoas.

"I'm enjoying my PhD project. I plan my research, work on the tasks, deal with any difficulties by solving the problems that come up, achieve goals and develop my proficiency in particular areas. The whole experience is teaching me to be innovative and creative.

"Yaoyao chose the University of Auckland for her PhD because "as we all know, it is a worldwide famous, highly ranked university, in this beautiful country."

After completing her studies Yaoyao hopes to pursue a professional career in food science.

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## **Forensic Science**

Apply your scientific expertise to matters of the law with Forensic Science. As our knowledge and technical expertise in science increases, so does the complexity and importance of the science presented to the courts in the legal system.

The Forensic Science programme is jointly run by the University of Auckland and the Institute of Environmental Science and Research (ESR), who are the suppliers of forensic science to the New Zealand Police.

As a Forensic Science student you will cover a broad range of topics, from the statistical evaluation of glass evidence to the development of new molecules to aid in the visualisation of fingerprint residues. You will learn key skills in forensic searching and chemical and biological analysis.

Some of the courses available in this subject include:

- Introduction to Forensic Science
- Fundamental Concepts in Forensic Science
- Statistics and Molecular Biology for Forensic Science
- Techniques and Applications for Forensic Science
- Environmental Forensic Science
- Project in Forensic Science



SCIENCE

Explore and discover everything you need to know about studying postgraduate Forensic Science: science.auckland.ac.nz/pg-forensic-sci





### Our subject is ranked **#1** in New Zealand

**Biological Sciences** 

#1

QS World University Rankings by Subject 2021



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- ✓ Master of Science (MSc)
- Doctor of Philosophy (PhD)

You may also be interested in our programmes in Biological Sciences, Chemistry and Medicinal Chemistry.

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### **Careers in Forensic Science**

Forensic science is the application of science to matters of law. Our postgraduate qualifications in Forensic Science will prepare you for a career in forensic science and introduce you to leading edge issues and techniques in this exciting field.

Our graduates learn key skills in forensic searching, chemical and biological analysis as well as modern data analysis.

Many of our alumni have gone on to become forensic scientists or technicians, and can be found in forensic science organisations, the New Zealand Police, academic and commercial science organisations and government agencies.

Others have chosen related careers or decided to pursue further study.

Our graduates have been employed in the following jobs:

- + Forensic scientist, Department of Health (NSW)
- Forensic DNA analyst, Royal Canadian Mounted Police
- · Crime scene attendant, New Zealand Police
- · Senior forensic biologist, Environmental Science & Research Ltd
- · Toxicologist scientist, The Drug Detection Agency



### Jessie Davys

Master of Science in Forensic Science.

"The main thing that drew me to Forensic Science was its ability to help the people who sometimes cannot help themselves. I would be helping these people by using my science knowledge to assist in a court scenario.

"I did my MSc thesis on 'The use of Diamond™ nucleic acid binding dye to locate both finger marks and touch DNA on non-porous items obtained from drug seizures'. It is a dye that when bound to DNA, fluoresces under blue light, so you can identify on items exactly where DNA is located and finger marks. It will help to target DNA on case related items which, in turn, will give better DNA profiling results.

"I have been working at The Institute of Environmental Science and Research Ltd (ESR) as a Senior Forensic Technician with the Physical Evidence Team within Forensic Chemistry.

"I hope that with my MSc research, it can be used routinely here with ESR but also with other Forensic Science institutes."

"The highlight of my career so far has been getting my job with ESR, as positions in Forensic Science in New Zealand are limited, with the bonus that I can see my MSc research being extended and possibly validated into what we do here at ESR."

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## Geophysics

As a postgraduate Geophysics student you'll take a customised mix of advanced courses in Earth Sciences, Mathematics and Physics and focus on applied/solid earth, atmospheric or marine geophysics.

Areas of research open to exploration include climate dynamics and processes, fluid dynamics of the ocean and atmosphere, and subsurface imaging and investigation with a variety of applied geophysical methods at different scales and settings.

Some of the courses available in this subject include:

- Geophysical Fluid Dynamics
- Climate Dynamics
- Turbulent Processes in Climate
- $\cdot$   $\,$  Waves and Potentials  $\,$
- Integrated Basin Exploration
- Subsurface Characterisation with Geophysical Methods



SCIENCE

Explore and discover everything you need to know about studying postgraduate Geophysics: science.auckland.ac.nz/pg-geophysics





Our subject is ranked in the **TOP 100** worldwide



**Marine Sciences** 

Earth and

QS World University Rankings by Subject 2021



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You may also be interested in our programmes in Physics, Mathematics, Geography, Environmental Science and Earth Sciences.

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### **Careers in Geophysics**

Postgraduate study in Geophysics prepares you for employment in areas that rely on a physics-based understanding of our environment.

You can expect to find employment researching global processes such as plate tectonics, earthquakes, volcanoes, the oceans, atmosphere and climate.

Geophysicists can also become explorers for natural resources, looking for oil, minerals and groundwater, and help to monitor and manage environmental problems including natural hazards or pollution.

Our graduates have been employed in the following jobs and industries:

- · Atmospheric scientist
- · Energy industry (hydrocarbon, geothermal)
- Geohazard research
- Ground water exploration
- Consultancies including engineering geophysics
- Mineral exploration
- Oceanographer
- Researcher at Crown Institutes such as GNS or NIWA



### Jonathan Simpson

#### Bachelor of Science (Honours) in Geophysics.

"I've always had an interest in the natural environment and the physical processes operating within it – how volcanoes erupt, the mechanics and effects of earthquakes, and predicting the complex weather patterns around New Zealand.

"This is due to my enjoyment of studying science subjects in school (particularly physics and maths) and my love for spending time in the outdoors.

"Geophysics is the perfect subject for me to pursue, as it allows me to study and describe the physical environment using mathematics and physics principles."

"Studying for a BSc in Geophysics has not only greatly increased my knowledge of this subject, but it has also allowed me to develop important skills such as critical thinking and software programming which can be applied in many different situations.

"In the short term, my BSc has set a strong platform for me to pursue further study in Geophysics. I hope to continue in postgraduate study and further enhance my knowledge and skills in this field.

"In the longer term, Geophysics offers a wide range of employment options in New Zealand and overseas, so I hope to be employed within one of the many industry roles or within a university as a researcher."

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Continue your Science journey as part of our community.



## **Green Chemical Science**

Postgraduate study in Green Chemical Science aims to equip you with the necessary skills and knowledge to make important contributions to scientific research in this field.

You will learn about the design and implementation of new manufacturing processes that are benign to the environment and are not hazardous to human health, global warming and sustainable energy sources, full life cycle concepts and assessments, recycling, and the use of green production strategies including biorefineries and enzymatic transformations.

Some of the courses available in this subject include:

- Advanced Green Chemistry
- Modern Methods for the Synthesis of Bioactive
  Molecules
- Environmental Pollution

- Advanced Inorganic Chemistry
- Chemicals Big and Small
- Biomolecular Chemistry



SCIENCE

Explore and discover everything you need to know about studying postgraduate Green Chemical Science: science.auckland.ac.nz/pg-green-chem





Our subject is ranked **#1** in New Zealand

> QS World University Rankings by Subject 2021



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### **Careers in Green Chemical Science**

#### A buoyant future in an interdisciplinary field

Businesses both here and overseas are fast realising that green chemical science approaches can lessen a company's environmental impact, increase their profit margins and improve consumer relationships. What's good for the planet is good for business, and the demand for greener processes means there's an increasing number of jobs available in the sustainability science arena.

Green Chemical Science graduates may find themselves in multi-faceted spaces working alongside people with different skill sets to deliver the best products and processes. As a graduate of this inter-disciplinary specialisation you'll be equipped with the necessary skills and knowledge to take advantage of these career opportunities, and to contribute to society in a meaningful and informed way.

Jobs for our Green Chemical Science graduates include:

- Chemist
- · Environmental scientist or consultant
- Sustainability scientist
- · Chemical policy advisor
- · Hazard analyst or communication expert
- Scientific adviser
- Research scientist

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### Kapish Gobindlal

#### Doctor of Philosophy in Chemistry.

"I've always been concerned about the effect we as humans have on the environment, especially how we treat highly toxic waste.

"After completing my chemistry degree (BSc Honours) in 2013, I decided to work for a year in industry before starting my PhD. One year in industry quickly became six and I realised that there was a huge gap between the high-quality research output of institutions and the industrial implementation of those ideas.

"Pursuing a PhD has allowed me to progress the fundamental understanding of an emerging sector in chemistry, with the goal to directly inform treatment processes for toxic pollutants.

"My area of research is centred around developing a novel and scalable technology, known as high-energy ball milling, to effectively destroy toxic chemicals at a molecular level."

"This method is seen as a green solution for persistent pollutants as no hazardous by-products are generated by the process and there is no requisite for noxious solvents or large energy input, thereby providing a sustainable alternative to current industry practices.

"This PhD will allow me to straddle the line between academia and industry, bridging the gap between high-quality research output and industrial application."

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## **Medicinal Chemistry**

Postgraduate study in Medicinal Chemistry combines advanced courses in Chemistry, Biology and Medical Science with laboratory work and a year-long research project supervised by an academic staff member in the School of Chemical Sciences.

Research interests open to exploration include: analytical chemistry, biomolecular chemistry, structural and computational chemistry, bioactive molecules, structural biology, molecular cell biology, toxicology and clinical pharmacology.

Some of the courses available in this subject include:

- Advanced Medicinal Chemistry
- Advanced Physical Chemistry
- Advanced Inorganic Chemistry
- Biomolecular Chemistry
- Current Topics in Analytical Chemistry
- Modern Methods for the Synthesis of Bioactive
  Molecules



SCIENCE

Explore and discover everything you need to know about studying postgraduate Medicinal Chemistry: science.auckland.ac.nz/pg-med-chem









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### **Careers in Medicinal Chemistry**

Medicinal Chemistry is one of the most rapidly developing areas within the discipline of chemistry, both globally and locally.

Medicinal chemists design and develop drugs for the treatment of disease. By completing the Medicinal Chemistry degree programme, you will have been provided with a unique combination of skills: you will be trained in the synthesis, reactivity and analysis of organic compounds and gain valuable insight into the pharmacological, regulatory and ethical aspects of these bioactive compounds.

Our graduates find employment in a wide range of institutions such as biomedical and pharmaceutical companies, hospitals, local and national government agencies, private research institutions and Crown Research Institutes.

Our graduates have been employed in the following jobs:

Commercialisation manager, Kiwi Innovation Network

- Patent executive, A J Park
- Medicinal chemist, University of Auckland
- Medical laboratory assistant, New Zealand Blood Service
- Laboratory technician, Eurofins



### **Urawadee Rajchakit**

Doctor of Philosophy in Chemistry, specialising in Medicinal Chemistry.

"My career goal is to become an academic research professor, and a PhD would help me achieve experimental techniques as well as the in-depth knowledge necessary to be a strong contributor to my field of interest.

"I focused on this topic because overcoming bacterial resistance to antimicrobial agents is one of the biggest obstacles we are facing in today's society."

"Besides that I really enjoyed Chemistry and Biology, especially bench works since high school and this passion carried me through all the way to PhD.

"Currently, I am working on a project of designing and synthesising novel promising antimicrobial peptides to selectively target multi-drug resistant bacteria with safe therapeutic profile for human use.

"I hold a University of Auckland Doctoral Scholarship, which supports me for tuition fees and other expenses. Also, friendly research environment provided by students and staff at the School of Chemical Sciences gives me motivation for research."

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## Medical Physics and Imaging Technology

Medical Physics and Imaging Technology is the application of physics theories, technologies and methods in the field of biomedical imaging, modelling, diagnostics and disease treatments.

This programme involves extensive specialist training in imaging and physiology that may create a pathway to proceed to further postgraduate study in Medical Physics, Biophotonics, Biomedical Imaging or Biophysics.

Some of the courses available in this subject include:

- · Condensed Matter Physics
- Advanced Biomedical Imaging
- Stem Cells and Development
- Biomedical MRI
- Quantum Optics

- Pharmacometrics
- The Dynamic Universe
- Waves and Potentials
- Reproductive Science
- Integrative Physiology



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Medicine

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### Careers in Medical Physics and Imaging Technology

There is a real need in the biomedical industries for graduates who are proficient in the complementary areas of physics, biology and physiology, and skilled in the design and application of Imaging Technologies.

The Auckland District Health Board and companies such as Cubic Health and Orion Health require medical physicists with the specific skillset required in biophotonic, biomedical imaging and instrumentation.

Our graduates have been employed in the following jobs:

- Medical intern, Northland District Health Board
- Software test engineer, Orion Health
- Scientific officer, Auckland District Health Board
- Analyst programmer, Agility CIS
- Consultant, SMS Management and Technology Ltd

Other jobs related to Medical Physics and Imaging Technology include:

- Health analyst
- Medical physicist
- Scientific advisor

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## Fang Ou (Rachel)

Graduated with a Bachelor of Technology (Honours) in Medical Physics and Imaging Technology (currently offered as the BSc(Hons) in Medical Physics and Imaging Technology). Graduated with a Doctor of Philosophy in Physics.

"Due to its inter-faculty structure, the MPIT specialisation is naturally interdisciplinary and I saw it as an opportunity to explore different scientific and engineering disciplines. This served me well as I was interested in all sciences and I was not yet ready to choose a particular area to focus on.

"My undergraduate education prepared me well for my interdisciplinary PhD research, which was challenging at times but also a highly enjoyable process. The Honours degree in MPIT enabled my direct admission into a PhD program in Physics.

"The University of Auckland is internationally recognised and my PhD qualifications and learnings opened the door to various kinds of job opportunities around the world."

"Currently, I am living and working in the Netherlands. I am a parttime postdoc at the Eindhoven University of Technology and also Head of Data Science at a start-up company, MantiSpectra, that is commercialising miniaturised chip-based NIR spectral sensors for a range of materials analysis applications.

"My current roles in the Netherlands directly use the research skills developed over the years of my PhD studies and my experience from previous studies at the University of Auckland in optics and photonics."



## Photonics

Photonics is the technology behind the generation and control of light. A comparatively new field of research, photonics is set to become a key technology for the 21st Century. Through the use of lasers, optics, and electro-optical devices it aims to allow new measurements and applications across many diverse fields of technology.

You will pursue advanced courses in Physics and Electrical Engineering and learn about the design and use of lasers, optical fibres, waveguides, microresonators, optoelectronic devices, optical communications, sensing, imaging and detection.

Some of the courses available in this subject include:

- Optoelectronics and Communications
- Waves and potentials
- Photonics

BSc

Digital Communications
 BSc(Hons)
 PhD

• Quantum Optics and Quantum Information

· Advanced Imaging Technologies

Explore and discover everything you need to know about studying postgraduate Photonics: www.science.auckland.ac.nz/pg-photonics







#### **No.1** In New Zealand for Employability

QS World Rankings Graduate Employability, number one in NZ and 59th Worldwide in 2020

#### AVAILABLE IN:

- ✓ Bachelor of Science (Honours) (BSc(Hons))
- Doctor of Philosophy (PhD)

You may also be interested in our programmes in Physics, Geophysics, Mathematics and Medical Physics and Imaging Technology.

#1

**Physics and Astronomy** 



Start early to avoid disappointment. Supervisors can usually only take a small number of students, so make sure you talk to them sooner rather than later.

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### **Careers in Photonics**

The field of photonics, also known as optoelectronics or electro-optics is having a significant impact on society.

In New Zealand and around the world there is growing demand for staff with an understanding of optics as well as electronics.

Many industries are finding that the equipment they service or develop contains optical or photonic components as well as traditional electronics, and there is a growing demand for people who understand this technology.

Our graduates now work in the photonics industry in New Zealand and many have also found employment at major photonics companies worldwide.

• Senior clinical research scientist, Fisher and Paykel Healthcare

Our graduates have been employed in the following jobs:

- Optical systems engineer, Trimble Navigation
- · Software engineering manager, Cubic Defence New Zealand

Other jobs related to Photonics include:

- Communications technician
- Photonics R&D specialist
- · Fibre optic technician
- · Telecommunications technician

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### **Andrew Su**

#### Bachelor of Science (Honours) in Photonics.

"I was always interested in the area of optics, particularly the experimental and hands-on side, which this degree is perfect for. The degree is also very flexible, by the end of it you are well equipped to begin a career in photonics or proceed to further study.

"The topic for my dissertation is titled 'Fibre-ring laser driven Kerr microresonators'. Essentially I built a laser, and the laser was shot into a small structure called a microresonator that allows for cool effects. The main objective is to demonstrate a working system that is cheaper, compact and more efficient.

"I work with the Auckland Laser Lab Group and the area of study is nonlinear optics. When you put highly intense light into an optical material the material's properties can change depending on how intense the light is itself, leading to many cool effects.

"The field of nonlinear optics is really exciting and is highly relevant to emerging optical technologies in the future."

"I really enjoy the hands-on and experimental side of things. The degree requires a few electrical engineering courses, an experimental physics course and a 45-point project, so you get a lot of experience in practical work. The Physics courses you take also complement the work very well and you develop a deep understanding of the physical principles.

"I hope to forge a career in research orientated optical telecommunications, or other applications of nonlinear optics, or maybe even further research."

### Haere tonu ki tõu ara pūtaiao i tõ mātou Hāpori. Continue your Science journey as part of our community.



Physics

Whether your interest lies in pure physics or a multi-disciplinary field, postgraduate study in Physics offers you a wide range of research options.

From inventing new kinds of lasers, creating innovative technologies to diagnose illness in living tissue, understanding the Earth's changing climate, and searching for planets around distant stars, to understanding the connections between particle physics and the Big Bang, our graduates are well-equipped to work in industry and academia.

You will gain an understanding of the nature of the physical world, alongside training in experimental methods, and the mathematical analysis of physical processes.

Some of the courses available in this subject include:

- Advanced Quantum Mechanics
- Mathematical Biology
- Advanced Imaging Technologies
- Subsurface Characterisation with Potential Field Methods
- Subsurface Imaging with Seismic and Radar
  Waves
- Stochastic Differential and Difference
  Equations
- · Optoelectronics and Communications



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- Postgraduate Diploma in Science (PGDipSci)
- ✓ Master of Science (MSc)
- Doctor of Philosophy (PhD)

You may also be interested in our programmes in Biological Sciences, Geophysics, Mathematics, Medical Physics and Imaging, and Photonics.

> Our subject is ranked **#1** in New Zealand





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### **Careers in Physics**

All of modern science and technology is underpinned by physics and our vibrant research programme illustrates the variety of topics tackled by physicists.

Graduating from a postgraduate programme in Physics opens the door to a range of opportunities for a career in research, business, finance, IT and engineering sector.

You will get the skills you need to succeed and work in a host of interesting jobs in New Zealand and around the world.

Our graduates have been employed in the following jobs:

- Physicist, University of California, Irvine .
- Theoretical nuclear physicist, Lawrence Livermore National Laboratory
- Director of software engineering, MMI S.r.l •
- Photonics researcher, LGS Innovations .
- · Chief scientific officer, ADM Diagnostics LLC
- Consultant medical physicist, The Australasian College of Physical Scientists and . Engineers in Medicine
- Meteorologist, hydro & meteo GmbH & Co. KG
- Professor, University of Southampton



### Ankita Gangotra

#### Doctor of Philosophy in Physics.

"I completed a Masters of Electronics Engineering with Nanotechnology in the UK in 2015. I decided to study towards my PhD at the University of Auckland because of the good reputation the University has.

"My thesis topic is about the adaptation and application of nanoaspiration. It involves studying the mechanical properties of soft biological nanoparticles and allows me to work in the fields of nanotechnology, physics, chemistry, engineering and biology.

"The interdisciplinary aspect of my project has great potential for research, which is fantastic, as I hope to do independent research and eventually become an entrepreneur."

"I have an excellent supervisor who helps guide my research and, as built networks. I also get to teach undergraduate laboratory courses, which I really enjoy.

"I believe the future of technology lies in multi-disciplinary research, especially when it comes to medical and environmental applications. I'm motivated by the complex challenges in these fields. I am looking for opportunities to impact societal change through science and

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## Haere tonu ki tõu ara pūtaiao i tō mātou Hāpori.

**Continue your Science journey** as part of our community.



## Wine Science

New Zealand has an excellent reputation for winemaking. If you want to be a part of this exciting industry, postgraduate study in Wine Science will give you an understanding of the science of winemaking and help prepare you for a career in this field.

You'll be based at the beautiful Goldwater Wine Science Centre on Waiheke Island, a 40-minute ferry trip from Auckland city, and you'll get hands-on experience in our winemaking facilities and in the vineyard, alongside opportunities to work with professional winemakers.

Some of the courses available in this subject include:

- Winemaking in a New Zealand Setting
- The Science Behind Grape Production
- The Science Behind Winemaking
- Sensory Evaluation and Statistical Methods
- The Business of Wine Production
- · Post-fermentation Processes in Winemaking





\* Chemistry, Food Science, Biological Sciences

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#### AVAILABLE IN:

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- ✓ Master of Science (MSc)
- Master of Wine Science (MWineSci)
- Doctor of Philosophy (PhD) in Chemistry, Food Science, Biological Sciences

You may also be interested in our programmes in Chemistry, Geography, Biomedical Science and Forensic Science.



A unique education facility for our students on Waiheke Island

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### **Careers in Wine Science**

Wine Science prepares students to work within the wine industry – either as a winemaker or in another role – in New Zealand and overseas.

It's also a great preparatory programme for other jobs, as our graduates learn the essential theory and practical skills to find employment in the wider hospitality industry.

With a postgraduate qualification in Wine Science you may decide to take seasonal vintage jobs, and experience two vintages in one year by working in both the Northern and Southern hemispheres.

Longer term, most of our graduates find permanent positions in winemaking, viticulture, research, laboratories or quality assurance positions. A few also choose sales and marketing positions in the wine industry.

Our graduates have been employed in the following jobs:

- Assistant Winemaker, Ata Rangi Wines
- Managing director, Wine Home Pty Ltd
- Vineyard specialist, Felton Road Wines
- Director, Wintek NZ Co Ltd
- Laboratory manager, Craggy Range Winery Ltd
- Bottling manager, Treasury Wine Estates

### Ruairi Kavanagh

Postgraduate Diploma in Science in Wine Science.

"After finishing my undergraduate degree in biomedical science, I started working in a laboratory for a winery. I really fell in love with the industry – I work well under pressure, so the intensity and stress that comes along with vintage really suits me.

"Wine science is all about the science of grape production and winemaking. From pruning vines to filtering the final wine, we learn everything from how to taste wine to how to run a wine business.

#### "I love how practical the course is – along with lectures, we pick our own grapes, process them and make our own wine."

"All of this is done on-site, at a winery on Waiheke Island. It really puts the academic side into perspective.

"The lecturers in this course are truly exemplary. They are all incredibly passionate about what they do and will always help you out in all aspects of your life, not just study. Teacher or student, we all do this course because we love wine, and it really makes for a great environment to be in and learn from.

"I hope to travel to the northern hemisphere after my degree to do a vintage during their season. I want to learn as much as I can to eventually go on to making my own, organically grown wines."

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